Docket No. 0575/65823-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Taka-Aki Sato

Serial No.: [Rule 1.53(b) Contin. of 10/092,138]

Filed: Concurrently Herewith

For: METHOD OF PREPARING A PROTEIN ARRAY BASED ON BIOCHEMICAL PROTEIN-PROTEIN INTERACTION

1185 Avenue of the Americas
New York, New York 10036
April 8, 2004

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

PRELIMINARY AMENDMENT

Prior to examination of the above-identified application, please amend the application as follows.

Amendments to the Specification begin on page 2 of this paper.

Amendments to the claims are presented in the **Listing of Claims** section which begins on page 4 of this paper.

Remarks begin on page 8 of this paper.

Amendments to the Specification:

Please insert the following Cross-Reference To Related Applications section on page 1, before the Background section of the specification.

Cross-Reference To Related Applications

This application is a Rule 1.53(b) continuation, and claims the priority, of U.S. Serial No. 10/092,138, filed March 6, 2002, the entire contents of which is herein incorporated by reference.

Please replace the paragraph beginning on page 2, at line 17, with the following rewritten paragraph:

FAP-1 (PTPN13) has several alternatively-spliced forms that are identical to PTP-BAS/hPTP1E/PTPL1, (Maekawa, et al. 1994; Banville, et al. 1994; Saras, et al. 1994) and contains a membrane-binding region similar to those found in the cytoskeleton-associated proteins, ezrin, (Gould et al. 1989) radixin (Funayama et al. 1991) moesin (Lankes, et al. 1991), neurofibromatosis type II gene product (NFII) (Rouleau, et al. 1993), and protein 4.1 (Conboy, et al. 1991), as well as in the PTPases PTPH1 (Yang, et al. 1991), PTP-MEG (Gu, et al. 1991), and PTPD1 (Vogel, et al. 1993). FAP-1 intriguingly contains six GLGF (PDZ/DHR) (SEQ ID NO:34) repeats that are thought to mediate intra-and inter-molecular interactions among protein domains. The third GLGF (SEQ ID NO:34) repeat of FAP-1 was first identified as a domain showing the specific interaction with the C-terminus of Fas receptor (Sato, et al. 1995). This suggests that the GLGF (SEQ ID NO:34) domain may play an important role in targeting proteins to the submembranous cytoskeleton and/or in regulating biochemical activity. GLGF (SEQ ID NO:34) repeats have been previously found in guanylate kinases, as well as in the rat post-synaptic density protein (PSD-95)(Cho, et al. 1992), which is a homolog of the Drosophila tumor suppressor protein,

lethal-(1)-disc-large-1 [*dlg-1*] (Woods, et al 1991; Kitamura, et al. 1994). These repeats may mediate homo- and hetero-dimerization, which could potentially influence PTPase activity, binding to Fas, and/or interactions of FAP-1 with other signal transduction proteins. Recently, it has also been reported that the different PDZ domains of proteins interact with the C-terminus of ion channels and other proteins (Figure 1) (TABLE 1)(Kornau, et al. 1995; Kim, et al. 1995; Matsumine, et al. 1996).

Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) A method of preparing a protein array based on biochemical protein-protein interaction, comprising the steps of:

(a) depositing on a substrate an array of a first protein, the first protein comprising a PDZ domain; and

(b) applying a second protein, which comprises an amino acid sequence (S/T)-X-(V/I/L)-COOH, to the first protein array, the amino acid sequence (S/T)-X-(V/I/L)-COOH of the second protein binding to the PDZ domain of the first protein,

wherein each hyphen represents a peptide bond, each parenthesis encloses amino acids which are alternative to one other, each slash within such parentheses separates the alternative amino acids, and the X represents any amino acid which is selected from the group ~~comprising the twenty naturally occurring amino acids~~ consisting of alanine, cysteine, aspartic acid, glutamic acid, phenylalanine, glycine, histidine, isoleucine, lysine, leucine, methionine, asparagine, proline, glutamine, arginine, serine, threonine, valine, tryptophan and tyrosine.

2. (original) The method of claim 1, wherein the amino acid sequence (S/T)-X-(V/I/L) is fused to the C-terminal of the second protein.

3. (original) The method of claim 1, wherein the protein array is maintained under physiological condition, and is used to screen one or more drug targets.

4. (original) The method of claim 1, wherein the first protein deposited in step (a) is in a soluble buffer.

5. (original) The method of claim 1, wherein the first protein deposited in step (a) is immobilized in a gel.

6. (original) The method of claim 1, wherein the substrate includes a plurality of microwells contained therein, and the first protein is deposited in step (a) into the microwells.

7. (original) The method of claim 1, wherein the substrate includes a glass plate, and the first protein array is printed onto the glass plate in step (a).

8. (original) The method of claim 1, wherein the substrate includes a glass plate and a plurality of gel pads on the glass plate, and the first protein is deposited in step (a) onto the gel pads.

9. (original) The method of claim 1, wherein the first protein is deposited on the substrate by a robot.

10. (currently amended) The method of claim 1, wherein at least one array element ~~of the protein array~~ includes an oligonucleotide.

11. (currently amended) The method of claim 1, wherein at least one array element ~~of the protein array~~ includes messenger RNA.

12. (currently amended) The method of claim 1, wherein at least one array element ~~of the protein array~~ includes DNA.

13. (currently amended) The method of claim 1, wherein at least one array element includes a sugar.

Claims 14 and 15 (canceled).

16. (currently amended) A method of preparing a ~~protein~~ polypeptide array, comprising the steps of:

(a) depositing on a substrate an array of a first polypeptide, the first polypeptide comprising a PDZ domain; and

(b) applying a second polypeptide which comprises an amino acid sequence (s/T)-X-(V/I/L)-COOH to the first polypeptide array, the amino acid sequence (S/T)-X-(V/I/L)-COOH of the second polypeptide binding to the PDZ domain of the first polypeptide,

wherein each hyphen represents a peptide bond, each parenthesis encloses amino acids which are alternatives to one other, each slash within such parentheses separates the alternative amino acids, and the X represents any amino acid which is selected from the group ~~comprising the twenty naturally occurring amino acids~~ consisting of alanine, cysteine, aspartic acid, glutamic acid, phenylalanine, glycine, histidine, isoleucine, lysine, leucine, methionine, asparagine, proline, glutamine, arginine, serine, threonine, valine, tryptophan and tyrosine.

17. (currently amended) The method of claim 16, wherein at least one array element ~~of the protein array~~ includes an oligonucleotide in addition to the first polypeptide.

18. (currently amended) The method of claim 16, wherein at least one array element ~~of the protein array~~ includes messenger RNA in addition to the first polypeptide.

19. (currently amended) The method of claim 16, wherein at least one array element ~~of the protein array~~ includes DNA in addition to the first polypeptide.

20. (currently amended) The method of claim 16, wherein at least one array element ~~of the protein array~~ includes a sugar

in addition to the first polypeptide.

REMARKS

The subject application is a Rule 1.53(b) of U.S. Serial No. 10/092,138, filed March 6, 2002. U.S. Serial No. 10/092,138 is pending today and this application is co-pending therewith for the purposes of 35 U.S.C. §120. Serial No. 10/092,138 has been allowed and Applicant has paid the issue fee (and publication fee) in connection therewith.

By this Preliminary Amendment, Applicant has canceled claims 14 and 15, and amended claims 1, 10-13 and 16-20 to place the claims in better form for examination. Accordingly, claims 1-3 and 16-20, with claims 1 and 16 being in independent form, are now pending in the subject application and presented for examination. Applicant maintains that this Preliminary Amendment does not introduce new matter. Accordingly, Applicant respectfully requests entry of this Preliminary Amendment.

Copies of the Sequence Listing and Statement In Accordance With 37 C.F.R. §1.821(f) submitted on December 2, 2003 in Serial No. 10/092,138 are submitted concurrently herewith in connection with this continuation application, as **Exhibits A** and **B** attached hereto. The Sequence Listing and Statement In Accordance With 37 C.F.R. §1.821(f) were submitted concurrently with a computer readable Sequence Listing on December 2, 2003 in Serial No. 10/092,138. Serial No. 10/092,138 has been allowed. Accordingly, Applicant maintains that the computer readable Sequence Listing submitted in Serial No. 10/092,138 was compliant with all of the requirements of the Patent Office.

Applicant hereby requests, in connection with this continuation application, the use of the compliant computer readable Sequence Listing that is already on file for Serial No. 10/092,138 and the paper Sequence Listing submitted

herewith is identical to the computer readable copy filed for Serial No. 10/092,138.

The Office is hereby authorized to charge any additional fees which may be required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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